Electronic Version
Stylesheet Version v1.1.1

Claims

[c1] 1. A read only memory device with a high dielectric constant tunneling dielectric layer, comprising:
a substrate;
a tunneling dielectric layer, disposed over the substrate, wherein the tunneling dielectric layer is formed with a material selected from the group consisting of HfSiON and HfO_xN_y;
an electron trapping layer, disposed over the tunneling dielectric layer;
a top oxide layer, disposed over the electron trapping layer, wherein the tunneling dielectric layer, the electron trapping layer and the top oxide layer form a stacked structure;
a conductive layer, disposed at least over the top oxide layer; and
a buried drain region, configured in the substrate beside both sides of the stacked structure.

[c2] 2. The read only memory device with a high dielectric constant tunneling dielectric layer of claim 1, wherein a dielectric constant of the tunneling dielectric layer is greater than a dielectric constant of silicon dioxide.

[c3] 3. The read only memory device with a high dielectric constant tunneling dielectric layer of claim 1, wherein a buried drain oxide layer is further disposed over the buried drain region beside both sides of the stacked structures.

[c4] 4. The read only memory device with a high dielectric constant tunneling dielectric layer of claim 1, wherein the electron trapping layer comprises silicon nitride.

[c5] 5. The read only memory device with a high dielectric constant tunneling dielectric layer of claim 1, wherein the tunneling dielectric layer is formed with a material selected from the group consisting of ZrO_2, HfO_2 and ZrO_xN_y.